IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Patent Application No. 10/576,453

Confirmation No. 4116

Applicant: Frank Sieckmann et al.

Filed: April 20, 2006

TC/AU: 3742

Examiner: Nguyen, Hung D.

Docket No.: 810317

Customer No.: 95402

APPELLANTS' APPEAL BRIEF

Mail Stop Appeal Brief – Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

In support of the appeal from the final rejection dated September 1, 2010, Appellants now submit their Brief.

Real Party In Interest

The patent application that is the subject of this appeal is assigned to Leica Microsystems CMS GmbH.

Related Appeals and Interferences

There are no appeals or interferences that are related to this appeal.

Status of Claims

A.   Total Number of Claims in the application

There are 26 claims pending in the application.

B.   Current Status of the Claims

     1.   Claims cancelled: 1-24

     2.   Claims withdrawn from consideration but not cancelled: None

     3.   Claims pending: 25-50

     4.   Claims allowed: None

     5.   Claims rejected: 25-50

C.   Claims on Appeal

Claims 25-50 are on Appeal.

Status of Amendments

No amendments to the claims were made in the Response to Final Office Action dated August 24, 2010. Previous amendment to the claims was made in the Amendment in Response to Non-Final Office Action dated February 18, 2010, which was subsequently entered. The claims in Appendix A include the claims as previously listed in the Amendment in Response to Non-Final Office Action dated February 18, 2010.

Summary of Claimed Subject Matter

Independent claim 25 recites a method for laser microdissection including capturing an electronic image of at least one image detail of a specimen (e.g., paragraph [00113], lines 5-6; e.g., paragraphs [0026] and [0029]). The at least one image detail is processed using image analysis so as to automatically ascertain at least one object to be cut out (e.g., paragraph [00116], lines 1-3; e.g. paragraph [0036]). A contour of the at least one object is automatically calculated (e.g., paragraph [00116], lines 3-5; e.g., paragraph [0047]). A nominal cutting line around the at least one object to be cut out is automatically defined based on the calculated contour (e.g., paragraph [00117]; e.g., paragraph [0053]). Subsequently, the at least one object is cut out in response to a relative motion between a laser beam and the specimen (e.g., paragraph [00118]).

Grounds of Rejection to be reviewed on Appeal

Whether claims 25, 26, 29, 47 are anticipated under 35 U.S.C. §102 (b) by U.S. Patent 5,998,129 to Schutze et al. ("Schutze '129"). Whether claims 25, 26, 29, 45 and 47 are unpatentable under 35 U.S.C. §103(a) over Schutze '129 in view of U.S. Patent Application Pub. No. 2004/0252291 to Schutze et al. ("Schutze '291"). Whether claims 27 and 28 are unpatentable under 35 U.S.C. 103(a) over Schutze '129 in view of Schutze '291 and further in view of Schachter et al., Some Experiments in Image Segmentation by Clustering of Local Feature Values, Bruce J. Schachter, Larry S. Davis and Azriel Rosenfeld, Pattern Recognition, Vol. II, pp 19-28, 1979 ("Schachter"). Whether claims 30-37 and 48-49 are unpatentable under 35 U.S.C. §103 (a) over Schutze '129 in view of Schutze '291, Schachter and further in view of DE 19636074 ("Mengel"). Whether claims 38, 46 and 50 are unpatentable under 35 U.S.C. §103 (a) over Schutze '129 in view of Schutze '291 and further in view of U.S. Patent Application Pub. No. 2002/0025511 to Bova ("Bova"). Whether claims 39-40 are unpatentable under 35 U.S.C. §103 (a) over Schutze '129 in view of Schutze '291 and further in view of U.S. Patent Application Pub. No. 2002/0048747 to Ganser ("Ganser"). Whether claims 41-42 are unpatentable under 35 U.S.C. §103 (a) over Schutze '129 in view of Schutze '291, Ganser, and further in view of U.S. Patent No. 6,377,710 to Saund ("Saund"). Whether claim 43 is unpatentable under 35 U.S.C. §103 (a) over Schutze '129 in view of Schutze '291 and further in view of U.S. Patent Application Pub. No. 2001/0053245 to Sakai ("Sakai"). Whether claim 44 is unpatentable under 35 U.S.C. §103 (a) over Schutze '129 in view of Schutze '291, Schachter and further in view of International Patent Application Publication No. WO 03036266 to Schutze ("WO '266").

Argument

Rejection of claims 25, 26, 29 and 47 under 35 U.S.C. § 102 (b) based on Schutze '129

It is respectfully submitted that, for the reasons set forth below, this rejection should be withdrawn.

The Cited Reference

Schutze '129 describes a process for micro-injection, sorting and harvesting of single biological objects. The microscope slide, on which the biological object is positioned, is

moved either by hand, or automatically according to a predetermined pattern in an essentially circular or spiral shape around the chosen object. A laser beam draws a fine line of approximates 500 nm width around the desired object and separates it from its surroundings. See Schutze, column 7, lines 9-20.

Novelty of Claims 25, 26, 29 and 47 with respect to Schutze '129

Independent claim 25 recites "automatically calculating a contour of the at least one object; [and] automatically defining, based on the calculated contour, a nominal cutting line around the at least one object to be cut out." It is respectfully submitted that Schutze '129 fails to disclose these features. In contrast, Schutze merely describes moving a slide on which the biological object is positioned either by hand or automatically under the control of a computer program in a predetermined pattern. Contrary to the assertion set forth in the Final Office Action, it is respectfully submitted that the automatic movement of the slide in a predetermined pattern of a circle or spiral is not "inherently the same as automatically a contour of the at least one object." See Final Office Action dated May 25, 2010, section 3. Nowhere does Schutze '129 teach that the automatic movement of the slide follows a contour of the object, nor is it apparent that this would be inherently or necessarily the case. Indeed, it is unlikely that a predetermined pattern of a circle or a spiral would follow a contour of an object. Moreover, Schutze '129 does not provide an enabling disclosure for calculating or automatically moving the slide along a contour of the object. Rather, Schutze '129 states that the automatic movement may have a predetermined pattern, such as a circle or spiral, in contrast to the complex shape of a contour of a biological object. In any event, it is respectfully submitted that Schutze '129 nowhere teaches automatically calculating a contour of an object, as required by claim 25.

Because Schutze '129 does not disclose the above recited features of claim 25, it cannot anticipate claim 25, or its dependent claims 26, 29 and 47.

Withdrawal of the rejection of claims 25, 26, 29 and 47 under 35 U.S.C. § 102 based on Schutze '129 is respectfully requested.

Rejection of claims 25, 26, 29, 45 and 47 under 35 U.S.C. § 103 (a) based on Schutze '129 and Schutze '291

It is respectfully submitted that, for the reasons set forth below, this rejection should be withdrawn.

The Cited References

A description of Schutze '129 is provided above with respect to the rejection under 35 U.S.C. § 102.

Schutze '291 describes a system including an automatic surface area calculation function which is used to calculate a surface area enclosed by a manually drawn cutting line after the freehand drawing of a cutting line around the desired object. See Schutze '291 paragraphs [0015] and [0042].

Non-obviousness of Claims 25, 26, 29, 45 and 47 with respect to Schutze '129 and Schutze '291

Independent claim 25 recites "automatically calculating a contour of the at least one object; [and] automatically defining, based on the calculated contour, a nominal cutting line around the at least one object to be cut out." It is respectfully submitted that these features would not have been obvious in view of any combination of Schutze '129 and Schutze '291. As set forth above, Schutze '129 does not disclose these features. Nor does Schutze '129 suggest these features. With respect to Schutze '291, that reference does not cure the deficiencies of Schutze '129 and fails to teach or suggest automatically calculating a contour of at least one object, as required by claim 25. In contrast, Schutze '291 merely describes a calculation function for calculating a surface area of a cutting line. See Schutze '291, paragraphs [0015] and [0042]. Schutze '291 in fact specifically states that each biological object is marked or selected by a freehand cutting line 16. See Schutze '291 paragraph [0042]. Accordingly, Schutze does not teach or suggest automatically calculating a contour of an object, as required by claim 25.

Because each of Schutze '129 and '291 fail to teach or suggest the above-recited feature of claim 25, it is respectfully submitted that any combination of Schutze '129 and Schutze '291 could not teach or suggest this feature.

Further, it is respectfully submitted that a combination of Schutze '129, Schutze '291 would not include an enabling disclosure for automatically calculating a contour of at least one object.

For the foregoing reasons, it is respectfully submitted that independent claim 25 any combination of Schutze '129 and Schutze '291, to the extent proper, could not render claim 25 or its dependent claims 26, 29, 45 and 47 obvious.

Withdrawal of the rejection of claims 25, 26, 29, 45 and 47 under 35 U.S.C. § 103 (a) based on Schutze '129 and Schutze '291 is respectfully requested.

Rejection of claims 27 and 28 under 35 U.S.C. 103(a) based on Schutze '129, Schutze '291 and Schachter

It is respectfully submitted that, for the reasons set forth below, this rejection should be withdrawn.

The Cited References

A description of Schutze '129 is provided above with respect to the rejection under 35 U.S.C. § 102. A description of Schutze '291 is provided above with respect to the rejection of claim 25 under 35 U.S.C. § 103.

Schachter describes attempts to segment textured black and white images by detecting clusters of local feature values and partitioning the feature space so as to separate these clusters. See Schachter, the Abstract.

Non-obviousness of base claim 25, from which claims 27 and 28 depend, based on the cited references

Claims 27 and 28 depend from claim 25. It is respectfully submitted that Schachter does not cure the deficiencies of Schutze '129 and Schutze '291 with respect to claim 25 which recites "automatically calculating a contour of the at least one object; [and] automatically defining, based on the calculated contour, a nominal cutting line around the at least one object to be cut out." The Examiner does not rely on Schachter for teaching this feature, and it is respectfully submitted that, like Schutze '129 and Schutze '291, Schachter too fails to teach or suggest automatically calculating a contour of at least one object, as

required by claim 25. Instead, Schachter merely describes attempts to segment textured black and white images by detecting clusters of local feature values. See Schachter, Abstract.

Because each of Schutze '129, Schutze '291 and Schachter fail to teach or suggest automatically calculating a contour of at least one object, it is respectfully submitted that it would not have been obvious in view of these references to provide a method including automatically calculating a contour of at least one object and automatically defining a nominal cutting line based on the calculated contour, as required by independent claim 25. Further, none of the Schutze '129, Schutze '291 nor Schachter provide an enabling disclosure for automatically calculating a contour of at least one object. Thus, because it would not have been obvious to a person of ordinary skill in the art to include automatically calculating a contour of at least one object and automatically defining a nominal cutting line based on the calculated contour in any combination of Schutze '129, Schutze '291 and Schachter, and because the cited references do not provide an enabling disclosure for these features, it is respectfully submitted that any combination of Schutze '129, Schutze '291 and Schachter could not render claim 25, or its dependent claims 27 and 28, obvious.

Withdrawal of the rejection of claims 27 and 28 under 35 U.S.C. 103(a) based on Schutze '129, Schutze '291 and Schachter is respectfully requested.

Rejection of claims 30-37 and 48-49 under 35 U.S.C. §103 (a) based on Schutze '129, Schutze '291, Schachter and Mengel

It is respectfully submitted that, for the reasons set forth below, this rejection should be withdrawn.

The Cited References

A description of Schutze '129 is provided above with respect to the rejection under 35 U.S.C. § 102. A description of Schutze '291 is provided above with respect to the rejection of claim 25, 26, 29, 45 and 47 under 35 U.S.C. § 103. A description of Schachter is provided above with respect to the rejection of claims 27 and 28 under 35 U.S.C. § 103.

Mengel describes a unit for automatic image recording, a unit for extracting features from the image for producing image features, and a feature database for the storage of the

extracted image features for all patterns recorded in the learning phase. See Mengel, the Abstract.

Non-obviousness of base claim 25, from which claims 30-37 and 48-49 depend, based on the cited references

Claims 30-37 and 48-49 depend from claim 25. It is respectfully submitted that Mengel does not cure the deficiencies of Schutze '129, Schutze '291 and Schechter with respect to claim 25 which recites "automatically calculating a contour of the at least one object; [and] automatically defining, based on the calculated contour, a nominal cutting line around the at least one object to be cut out." The Examiner does not rely on Mengel for teaching this feature, and it is respectfully submitted that, like Schutze '129, Schutze '291 and Schachter, Mengel too fails to teach or suggest automatically calculating a contour of at least one object, as required by claim 25. Instead, Mengel merely describes a unit for image recording and extracting features from the images. See Mengel, Abstract.

Because each of Schutze '129, Schutze '291, Schachter and Mengel fail to teach or suggest automatically calculating a contour of at least one object, it is respectfully submitted that it would not have been obvious in view of these references to provide a method including automatically calculating a contour of at least one object and automatically defining a nominal cutting line based on the calculated contour, as required by independent claim 25. Further, none of the Schutze '129, Schutze '291, Schachter nor Mengel provide an enabling disclosure for automatically calculating a contour of at least one object. Thus, because it would not have been obvious to a person of ordinary skill in the art to include automatically calculating a contour of at least one object and automatically defining a nominal cutting line based on the calculated contour in any combination of Schutze '129, Schutze '291, Schachter and Mengel, and because the cited references do not provide an enabling disclosure for these features, it is respectfully submitted that any combination of Schutze '129, Schutze '291, Schachter and Mengel could not render claim 25, or its dependent claims 30-37, 48 and 49, obvious.

Withdrawal of the rejection of claims 30-37 and 48-49 under 35 U.S.C. §103 (a) based on Schutze '129, Schutze '291, Schachter and Mengel is respectfully requested.

Rejection of claims 38, 46 and 50 under 35 U.S.C. §103 (a) based on Schutze '129, Schutze '291 and Bova

It is respectfully submitted that, for the reasons set forth below, this rejection should be withdrawn.

The Cited References

A description of Schutze '129 is provided above with respect to the rejection under 35 U.S.C. § 102. A description of Schutze '291 is provided above with respect to the rejection of claim 25, 26, 29, 45 and 47 under 35 U.S.C. § 103.

Bova describes a process and apparatus for cell purification and ablation. Bova thereby requires that an operator first review target cell selections before initiating the selective laser exposure process. See Bova, the Abstract and paragraph [0062].

Non-obviousness of base claim 25, from which claims 38, 46 and 50 depend, based on the cited references

Claims 38, 46 and 50 depend from claim 25. It is respectfully submitted that Bova does not cure the deficiencies of Schutze '129 and Schutze '291 with respect to claim 25 which recites "automatically calculating a contour of the at least one object; [and] automatically defining, based on the calculated contour, a nominal cutting line around the at least one object to be cut out." The Examiner does not rely on Bova for teaching this feature, and it is respectfully submitted that, like Schutze '129 and Schutze '291, Bova too fails to teach or suggest automatically calculating a contour of at least one object, as required by claim 25. Instead, Bova merely describes a process for cell purification and ablation that includes an operator review of target cell selections before initiating laser exposure processes. See Bova, Abstract and paragraph [0062].

Because each of Schutze '129, Schutze '291 and Bova fail to teach or suggest automatically calculating a contour of at least one object, it is respectfully submitted that it would not have been obvious in view of these references to provide a method including automatically calculating a contour of at least one object and automatically defining a nominal cutting line based on the calculated contour, as required by independent claim 25. Further, none of the Schutze '129, Schutze '291 nor Bova provide an enabling disclosure for

automatically calculating a contour of at least one object. Thus, because it would not have been obvious to a person of ordinary skill in the art to include automatically calculating a contour of at least one object and automatically defining a nominal cutting line based on the calculated contour in any combination of Schutze '129, Schutze '291 and Bova, and because the cited references do not provide an enabling disclosure for these features, it is respectfully submitted that any combination of Schutze '129, Schutze '291 and Bova could not render claim 25, or its dependent claims 38, 46 and 50, obvious.

Withdrawal of the rejection of claims 38, 46 and 50 under 35 U.S.C. §103 (a) based on Schutze '129, Schutze '291 and Bova is respectfully requested.

Rejection of claims 39 and 40 under 35 U.S.C. §103 (a) based on Schutze '129, Schutze '291 and Ganser

It is respectfully submitted that, for the reasons set forth below, this rejection should be withdrawn.

The Cited References

A description of Schutze '129 is provided above with respect to the rejection under 35 U.S.C. § 102. A description of Schutze '291 is provided above with respect to the rejection of claim 25, 26, 29, 45 and 47 under 35 U.S.C. § 103.

Ganser describes a method and an apparatus for laser microdissection of specimen regions. A desired reference cut line for the perforation to be generated is marked by a user in a camera image with a computer mouse using a corresponding software program. See Ganser, paragraphs [0006], [0042] and the Abstract.

Non-obviousness of base claim 25, from which claims 39 and 40 depend, based on the cited references

Claims 39 and 40 depend from claim 25. It is respectfully submitted that Ganser does not cure the deficiencies of Schutze '129 and Schutze '291 with respect to claim 25 which recites "automatically calculating a contour of the at least one object; [and] automatically defining, based on the calculated contour, a nominal cutting line around the at least one object to be cut out." The Examiner does not rely on Ganser for teaching this feature, and it

is respectfully submitted that, like Schutze '129 and Schutze '291, Ganser too fails to teach or suggest automatically calculating a contour of at least one object, as required by claim 25. Instead, Ganser a laser microdissection apparatus in which the user marks a cutting line on a camera image using a computer mouse. See Ganser, paragraphs [0006], [0042] and Abstract.

Because each of Schutze '129, Schutze '291 and Ganser fail to teach or suggest automatically calculating a contour of at least one object, it is respectfully submitted that it would not have been obvious in view of these references to provide a method including automatically calculating a contour of at least one object and automatically defining a nominal cutting line based on the calculated contour, as required by independent claim 25. Further, none of the Schutze '129, Schutze '291 nor Ganser provide an enabling disclosure for automatically calculating a contour of at least one object. Thus, because it would not have been obvious to a person of ordinary skill in the art to include automatically calculating a contour of at least one object and automatically defining a nominal cutting line based on the calculated contour in any combination of Schutze '129, Schutze '291 and Ganser, and because the cited references do not provide an enabling disclosure for these features, it is respectfully submitted that any combination of Schutze '129, Schutze '291 and Ganser could not render claim 25, or its dependent claims 39 and 40, obvious.

Withdrawal of the rejection of 39 and 40 under 35 U.S.C. §103 (a) based on Schutze '129, Schutze '291 and Ganser is respectfully requested.

Rejection of claims 41 and 42 under 35 U.S.C. §103 (a) based on Schutze '129, Schutze '291, Ganser, and Saund

It is respectfully submitted that, for the reasons set forth below, this rejection should be withdrawn.

The Cited References

A description of Schutze '129 is provided above with respect to the rejection under 35 U.S.C. § 102. A description of Schutze '291 is provided above with respect to the rejection of claim 25, 26, 29, 45 and 47 under 35 U.S.C. § 103. A description of Ganser is provided above with respect to the rejection of claims 39 and 40 under 35 U.S.C. § 103.

Saund describes a method and apparatus for thinning a binary figure within an image that has black and white pixels with boundaries therebetween and midpoints on such boundaries for each pixel. See Saund, column 2, lines 35-38.

Non-obviousness of base claim 25, from which claims 41 and 42 depend, based on the cited references

Claims 41 and 42 depend from claim 25. It is respectfully submitted that Saund does not cure the deficiencies of Schutze '129, Schutze '291 and Ganser with respect to claim 25 which recites "automatically calculating a contour of the at least one object; [and] automatically defining, based on the calculated contour, a nominal cutting line around the at least one object to be cut out." The Examiner does not rely on Saund for teaching this feature, and it is respectfully submitted that, like Schutze '129, Schutze '291 and Ganser, Saund too fails to teach or suggest automatically calculating a contour of at least one object, as required by claim 25. Instead, Saund merely describes a method and apparatus for thinning a binary figure within an image that has black and white pixels with boundaries therebetween and midpoints on such boundaries for each pixel. See Saund, column 2, lines 35-38.

Because each of Schutze '129, Schutze '291, Ganser and Saund fail to teach or suggest automatically calculating a contour of at least one object, it is respectfully submitted that it would not have been obvious in view of these references to provide a method including automatically calculating a contour of at least one object and automatically defining a nominal cutting line based on the calculated contour, as required by independent claim 25. Further, none of the Schutze '129, Schutze '291, Ganser nor Saund provide an enabling disclosure for automatically calculating a contour of at least one object. Thus, because it would not have been obvious to a person of ordinary skill in the art to include automatically calculating a contour of at least one object and automatically defining a nominal cutting line based on the calculated contour in any combination of Schutze '129, Schutze '291, Ganser and Saund, and because the cited references do not provide an enabling disclosure for these features, it is respectfully submitted that any combination of Schutze '129, Schutze '291, Ganser and Saund could not render claim 25, or its dependent claims 41 and 42, obvious.

Withdrawal of the rejection of claims 41 and 42 under 35 U.S.C. §103 (a) based on Schutze '129, Schutze '291, Ganser, and Saund is respectfully requested.

Rejection of claim 43 under 35 U.S.C. §103 (a) based on Schutze '129, Schutze '291 and Sakai

It is respectfully submitted that, for the reasons set forth below, this rejection should be withdrawn.

The Cited References

A description of Schutze '129 is provided above with respect to the rejection under 35 U.S.C. § 102. A description of Schutze '291 is provided above with respect to the rejection of claim 25, 26, 29, 45 and 47 under 35 U.S.C. § 103.

Sakai describes a high-precision alignment method, device and code for inspections that compare an inspection image with a reference image and detect defects from their differences. See Sakai, paragraph [0008].

Non-obviousness of base claim 25, from which claim 43 depends, based on the cited references

Claim 43 depends from claim 25. It is respectfully submitted that Sakai does not cure the deficiencies of Schutze '129 and Schutze '291 with respect to claim 25 which recites "automatically calculating a contour of the at least one object; [and] automatically defining, based on the calculated contour, a nominal cutting line around the at least one object to be cut out." The Examiner does not rely on Sakai for teaching this feature, and it is respectfully submitted that, like Schutze '129 and Schutze '291, Sakai too fails to teach or suggest automatically calculating a contour of at least one object, as required by claim 25. Instead, Sakai merely describes image alignment methods to align inspection images with reference images. See Sakai, paragraph [0008].

Because each of Schutze '129, Schutze '291 and Sakai fail to teach or suggest automatically calculating a contour of at least one object, it is respectfully submitted that it would not have been obvious in view of these references to provide a method including automatically calculating a contour of at least one object and automatically defining a nominal cutting line based on the calculated contour, as required by independent claim 25. Further, none of the Schutze '129, Schutze '291 nor Sakai provide an enabling disclosure for automatically calculating a contour of at least one object. Thus, because it would not have

been obvious to a person of ordinary skill in the art to include automatically calculating a contour of at least one object and automatically defining a nominal cutting line based on the calculated contour in any combination of Schutze '129, Schutze '291 and Sakai, and because the cited references do not provide an enabling disclosure for these features, it is respectfully submitted that any combination of Schutze '129, Schutze '291 and Sakai could not render claim 25, or its dependent claim 43, obvious.

Withdrawal of the rejection of claim 43 under 35 U.S.C. §103 (a) based on Schutze '129, Schutze '291 and Sakai is respectfully requested.

Rejection of claim 44 under 35 U.S.C. §103 (a) based on Schutze '129, Schutze '291, Schachter and WO '266

It is respectfully submitted that, for the reasons set forth below, this rejection should be withdrawn.

The Cited References

A description of Schutze '129 is provided above with respect to the rejection under 35 U.S.C. § 102. A description of Schutze '291 is provided above with respect to the rejection of claim 25, 26, 29, 45 and 47 under 35 U.S.C. § 103.

WO '266 describes a laser microdissection system where the user must first mark the desired objects with the support of a computer. The objects so marked are then cut out with a laser. See WO '266, page 5, line 12 to page 6, line 2.

Non-obviousness of base claim 25, from which claim 44 depends, based on the cited references

Claim 44 depends from claim 25. It is respectfully submitted that WO '266 does not cure the deficiencies of Schutze '129, Schutze '291 and Schachter with respect to claim 25 which recites "automatically calculating a contour of the at least one object; [and] automatically defining, based on the calculated contour, a nominal cutting line around the at least one object to be cut out." The Examiner does not rely on WO '266 for teaching this feature, and it is respectfully submitted that, like Schutze '129, Schutze '291 and Schachter, WO '266 too fails to teach or suggest automatically calculating a contour of at least one

object, as required by claim 25. Instead, WO '266 merely describes a laser microdissection system where the user must first mark the desired objects using a computer. See WO '266, page 5, line 12 to page 6, line 2.

Because each of Schutze '129, Schutze '291, Schachter and WO '266 fail to teach or suggest automatically calculating a contour of at least one object, it is respectfully submitted that it would not have been obvious in view of these references to provide a method including automatically calculating a contour of at least one object and automatically defining a nominal cutting line based on the calculated contour, as required by independent claim 25. Further, none of the Schutze '129, Schutze '291, Schachter nor WO '266 provide an enabling disclosure for automatically calculating a contour of at least one object. Thus, because it would not have been obvious to a person of ordinary skill in the art to include automatically calculating a contour of at least one object and automatically defining a nominal cutting line based on the calculated contour in any combination of Schutze '129, Schutze '291, Schachter and WO '266, and because the cited references do not provide an enabling disclosure for these features, it is respectfully submitted that any combination of Schutze '129, Schutze '291, Schachter and WO '266 could not render claim 25, or its dependent claim 44, obvious.
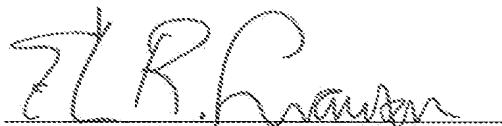
Withdrawal of the rejection of claim 44 under 35 U.S.C. §103 (a) based on Schutze '129, Schutze '291, Schachter and WO '266 is respectfully requested.

CONCLUSION

For the foregoing reasons, the rejections of claims 25-50 should be reversed. Appellants respectfully request that the application be remanded to the Primary Examiner with instructions to withdraw the rejections under 35 U.S.C. §§ 102 and 103, and pass the case to allowance.

The Commissioner is hereby authorized to charge any unpaid fees deemed required in connection with this submission, including any additional filing or application processing fees required under 37 C.F.R. §1.16 or 1.17, or to credit any overpayment, to Deposit Account No. 12-1216.

Respectfully submitted,

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Date: November 18, 2010

Appended Hereto: Claims Appendix
                     Evidence Appendix
                     Related Proceedings Appendix

Claims Appendix

Claims 1-24 (Cancelled)

Claim 25 (Previously Presented): A method for laser microdissection comprising:

capturing an electronic image of at least one image detail of a specimen;

processing the at least one image detail using image analysis so as to automatically ascertain at least one object to be cut out;

automatically calculating a contour of the at least one object;

automatically defining, based on the calculated contour, a nominal cutting line around the at least one object to be cut out; and

subsequently cutting out the at least one object in response to a relative motion between a laser beam and the specimen.

Claim 26 (Previously Presented): The method as recited in claim 25 further comprising preparing the electronic image for the processing using a contrasting method based on camera or microscope technology.

Claim 27 (Previously Presented): The method as recited in claim 25 wherein the processing the image detail is performed using a segmenting of the electronic image:

defining a grayscale threshold value on the basis of the electronic image; and

converting, by making a comparison with the grayscale value threshold, the electronic image to a binary image including only the at least one object segmented.

Claim 28 (Previously Presented): The method as recited in claim 27 wherein the defining a grayscale threshold value is performed by manually setting the threshold value or automatically defining the threshold value in an entropy maximization process.

Claim 29 (Previously Presented): The method as recited in claim 25 wherein the electronic image is either a grayscale image or a color image.

Claim 30 (Previously Presented): The method as recited in claim 27 wherein the processing the image detail includes:

defining specific classification features characterizing the at least one object so as to ascertain the at least one object;

classifying the at least one object using image analysis by determining from the image actually existing object features of the at least one object segmented and comparing the existing object features to the defined specific classification features.

Claim 31 (Previously Presented): The method as recited in claim 30 wherein the comparing is performed so as to determine whether the actually existing object features conform with the defined specific classification features.

Claim 32 (Previously Presented): The method as recited in claim 30 wherein the defining specific classification features includes defining, in each instance for different object types, individual feature data records including the specific classification features.

Claim 33 (Previously Presented): The method as recited in claim 30 wherein the defining specific classification features is performed automatically or manually in a learning process including inputting the classification features interactively or automatically by suitably marking the at least one object.

Claim 34 (Previously Presented): The method as recited in claim 33 wherein the marking is preformed using a mouse click.

Claim 35 (Previously Presented): The method as recited in claim 30 wherein automatically defining the nominal cutting line is performed so as to exclude unclassified objects.

Claim 36 (Previously Presented): The method as recited in claim 30 wherein the defining specific classification features includes defining a range of values for at least one of the specific classification features.

Claim 37 (Previously Presented): The method as recited in claim 30 further comprising excluding from the nominal cutting line objects, identified by the comparing the existing object features to the defined specific classification features, that border on an edge of the image detail or that are only partially visible in the image detail.

Claim 38 (Previously Presented): The method as recited in claim 25 wherein the at least one object includes a plurality of objects disposed in close proximity to one another, and further comprising combining the plurality of objects into a cluster, and wherein the automatically defining a nominal cutting line is performed so as to define a single shared nominal cutting line surrounding the cluster.

Claim 39 (Previously Presented): The method as recited in claim 25 further comprising:

       applying a mathematical transformation so as to automatically map the nominal cutting line onto a laser cutting line; and

       converting the laser cutting line into the relative motion between the laser beam and the specimen so as to provide a laser cut.

Claim 40 (Previously Presented): The method as recited in claim 39 further comprising initiating, by a user or automatically, the relative motion between the laser beam and the specimen.

Claim 41 (Previously Presented): The method as recited in claim 39 , wherein:

       the contour is an outer contour of the at least one object;

       the automatically calculating includes determining the outer contour of the at least one object using image analysis; and

       the automatically defining includes converting the outer contour into a numerical code specifying the automatically defined nominal cutting line.

Claim 42 (Previously Presented): The method as recited in claim 41 wherein the numerical code is a Freeman code or a chain code.

Claim 43 (Previously Presented): The method as recited in claim 25 further comprising performing an automatic shading correction including:

       recording an empty image without a specimen;

       storing the empty image as a shading correction image; and

       applying an offset correction to the captured electronic image using the shading correction image.

Claim 44 (Previously Presented): The method as recited in claim 27 further comprising removing a specific unwanted object of the at least one object from the binary image using image analysis morphology, the unwanted object being not designated for microdissection.

Claim 45 (Previously Presented): The method as recited in claim 25 further comprising providing a defined clearance distance in the specimen so as to prevent a neighboring object from being sliced through.

Claim 46 (Previously Presented): The method as recited in claim 38 further comprising separately cutting out at least one region enclosed by the cluster and not belonging to the cluster.

Claim 47 (Previously Presented): The method as recited in claim 25 further comprising superimposing, by an imaging device, the nominal cutting line onto the electronic image so as to control results of the cutting out.

Claim 48 (Previously Presented): The method as recited in claim 25 further comprising:
applying a mathematical transformation so as to automatically map the nominal cutting line onto a laser cutting line; and
scaling the laser cutting line as a function of the image magnification.

Claim 49 (Previously Presented): The method as recited in claim 25 further comprising:
applying a mathematical transformation so as to automatically map the nominal cutting line onto a laser cutting line; and
setting a defined clearance distance of the laser cutting line from the at least one so as to protect the object from damage caused by laser irradiation.

Claim 50 (Previously Presented): The method as recited in claim 25 further comprising modifying the nominal cutting line so as to compensate for imprecise repositioning of the microscope stage.

Evidence Appendix

No evidence pursuant to §§ 1.130, 1.131 or 1.132, or entered by or relied upon by the Examiner is being submitted.

Related Proceedings Appendix

There are no related proceedings, as set forth above. Hence, no related proceedings are included herewith.